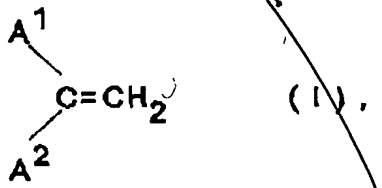
We claim:

1. A process for the preparation of surfactant alcohols which have particularly advantageous properties with regard to ecotoxicity and biodegradability and of corresponding surfactant alcohol ethers by
   a) dimerization of olefin mixtures,
   b) derivatization to give primary alcohols, and
   c) optional subsequent alkoxylation,
   which comprises using an olefin mixture which comprises from 30 to 80% by weight of linear hexene isomers and overall at least 60% by weight of hexene isomers.

2. A process as claimed in claim 1, wherein a hexene isomer mixture is used which comprises dimer propene and linear hexenes in a weight ratio of from 0.3:1 to 1:0.1.

3. A process as claimed in at least one of claims 1 and 2, wherein process step a), the dimerization, is carried out with heterogeneous catalysis.

4. A process as claimed in at least one of claims 1 to 3, wherein a dimerization catalyst is used which comprises at least one element of subgroup VIII of the Periodic Table and the catalyst composition and the reaction conditions are chosen such that a dimer mixture is obtained which comprises less than 10% by weight of compounds which have a structural element of the formula I (vinylidene group)



(I),

in which A^1 and A^2 are aliphatic hydrocarbon radicals.

5. An olefin mixture preparable by process step a) of the process of claim 1.

6. An olefin mixture as claimed ~~in claim~~ 5, which comprises a proportion - greater than 85%, in particular greater than 90% - of components with branches, and a low proportion - below 15, in particular below 10% - of unbranched olefins.

7. An olefin mixture as claimed in at least one of claims 5 and 6, wherein predominantly groups having (y-4) and (y-5) carbon atoms are bonded to the branching sites of the main chain, where y is the number of carbon atoms in the dimerized monomer.

8. An olefin mixture as claimed in at least one of claims 5 to 7, wherein the branched components of the dimerization mixture, in the region of 1/4 to 3/4, preferably from 1/3 to 2/3, of the chain length of the main chain, have a branch, or two branches on adjacent carbon atoms.

9. An olefin mixture as claimed in at least one of ~~claims~~ 5 to 8, wherein predominantly groups having one or two carbon atoms are bonded to the branching sites of the main chain.

10. An olefin mixture as claimed in at least one of claims 5 to 9, wherein, in the case of the branched components, the ratio of aliphatic to olefinic hydrogen atoms is in the range
$H_{aliph.} : H_{olefin.} = 47 : 1$ to $11 : 1$.

11. An olefin mixture as claimed in at least one of claims 5 to 10, wherein, in the case of the branched components, the ratio of aliphatic to olefinic hydrogen atoms is in the range
$H_{aliph.} : H_{olefin.} = 23 : 1$ to $14 : 1$.

12. A surfactant alcohol or alkoxylation products thereof, preparable by process steps a), b) and optionally c) of the process of claim 1.

13. A surfactant alcohol or alkoxylation products thereof as claimed in claim 12, which has a degree of branching between 2.0 and 3.0.

14. The use of the surfactant alcohol alkoxylation products of claim 12 as nonionic surfactants.

15. The use of the surfactant alcohols of claim 12 for the preparation of surfactants.

16. The use of the surfactant alcohols of claim 12 for the preparation of alkanol glycoside and polyglycoside mixtures by single or multiple reaction (glycosidation, polyglycosidation) with mono-, di- or polysaccharides with the exclusion of water and with acid catalysis or with O-acetylsaccharide halides.

17. The use of the surfactant alcohols and alkoxylation products thereof of claim 12 for the preparation of surface-active sulfates by esterification thereof with sulfuric acid or sulfuric acid derivatives to give acidic alkyl sulfates or alkyl ether sulfates.

18. The use of the surfactant alcohols and alkoxylation products thereof of claim 12 for the preparation of surface-active phosphates by esterification thereof with phosphoric acid or its derivatives to give acidic alkyl phosphates or alkyl ether phosphates.